

AMENDMENT UNDER 37 C.F.R. § 1.114(c)  
U.S. Appln. No. 09/842,047

**REMARKS**

Upon entry of this Amendment, claims 1-35 are all the claims pending in the application. Claims 32-35 have been added. Claims 1-3 and 8-24 are withdrawn from consideration as being drawn to a non-elected invention. Claims 4-7 and 25-31 presently stand rejected.

Claim 31 is rejected under 35 U.S.C. §112, first paragraph, as allegedly claiming material not supported by the specification.

Claims 4-7 are rejected under 35 U.S.C. § 102(b) as being anticipated by Okino et al. (USP 4,952,272).

Claims 25-28 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Applicant Admitted Prior Art (AAPA) in view of Okino et al. and vice versa.

Claims 29 and 30 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Applicant Admitted Prior Art (AAPA) in view of Okino et al. and further in view of Akram et al. (USP 5,686,317).

Claims 4-7 are alternatively rejected under 35 U.S.C. § 103(a) as being unpatentable over Applicant Admitted Prior Art (AAPA) in view of Okino et al. and vice versa.

For the following reasons, Applicant respectfully traverses the claim rejections and requests favorable disposition of the claims.

***Response to Examiner's Remarks from Advisory Action***

In the Advisory Action dated September 5, 2003, the Examiner contends that Applicants fail to understand the express language of the asserted prior art reference, Okino et al. In particular, the Examiner asserts that that the probe pin disclosed in Okino is formed into a "sharp

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point" and that the method used to form this sharp point is "essentially the same" as the method used to form the claimed device. Applicant disagrees as follows.

As clearly shown in figures 2(c) and 3(g), the distal end of the probe pin in Okino is flat, not pointed.

FIG. 2(c)

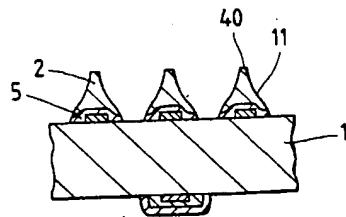
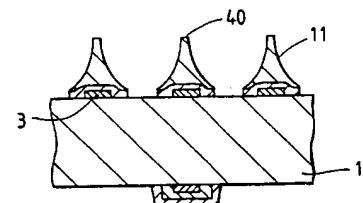


FIG. 3(g)



The fact that the probe pins 40 in Okino et al. are flat is further evidenced by the attendant description. For example, at col. 5, line 26, it is disclosed that the probe pin is formed with a "fine flat surface 40" and at col. 5, line 35, it is disclosed that "acute probe pin 11 [has] a fine flat surface 40 at the tip".

It is clear that the technique disclosed in Okino et al. requires that the distal end of the probe be flat, not pointed or sharp. In particular, in Okino et al. it is an objective that the probe pins have a uniform height. To achieve this objective the etching is stopped before the surface of the distal end of the pin is dissolved by the etch. Accordingly, pins having the same height, i.e., equal to the original film thickness, are achieved and each pin has a flat surface, not a "sharp pointed end", as recited in the claims.

The end of the pins disclosed and claimed in the present application are sharp and pointed because the distal end of the pin is stuck into the contact point of the object. With this operation the contamination coating film such as an oxide can be penetrated, thereby suppressing the

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contact resistance to a lower level. Additionally, contaminants attached to the pointed distal end of the pin are scraped off when the pin is stuck into the contact point. If the distal end were flat, like in Okino et al., such contaminants would not be scraped off and would remain within the contact point.

***§112 Rejection***

In response to the rejection under 35 U.S.C. §112, first paragraph, Applicant submits that the recited limitation requiring the bump portions to have a “beveled gear-shaped cross section” is supported by the specification as originally filed. For example, at least Figs. 1A, 4 and 8B, and their attendant descriptions in the specification support the claimed subject matter. In particular, at paragraph number 34 of the published application (US 2001/0038293 A1) it is stated that bumps 7a of Fig. 1B have a “pointed tapering sharp end.” Thus, from viewing bumps 7a in Fig. 1B and Fig. 4 in light of the description in the specification, it is clear that bumps 7a have a “beveled gear-shaped cross section.”

However, in order to advance prosecution of the present case, Applicant has voluntarily changed the phrase “beveled gear-shaped cross section” to “star-shaped cross section” in the claims. Further, since the Examiner has not asserted any prior art rejections against claim 31, Applicant requests that claim 31 now be found in condition for allowance.

***§102 Rejection***

In regard to the §102 rejection of claims 4-7 as being anticipated by Okino et al., Applicant has amended claim 4 as illustrated above. In particular, Applicant has added the requirement that the recited tapered bump have a “sharp pointed end”. Specifically, at paragraph

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number 34 of the published application it is disclosed that “bumps 7a each have a pointed tapering *sharp* end” and that each bump “is contacted with, or *pierces*, the corresponding electrode.” Okino et al. fails to teach or suggest this feature.

Okino et al., in comparison, discloses that each probe pin has a “*flat* surface.” (Col. 5, lines 26 and 35). The probe pins disclosed in Okino et al., therefore, do not function the same way as the pointed tapered bump portions of the present application. For example, the probe pins of Okino et al. are designed to merely “come into contact” with the electrode pad (see Col. 2, lines 14-15), whereas the bump portions of the present invention are designed to be able to *pierce* the electrode to ensure better contact. For at least this reason, Okino et al. does not anticipate claim 4, or any claims dependent thereon, specifically, claims 5-7, and the rejection to these claims should be withdrawn.

***§103 Rejection***

In regard to the §103 rejection of claims 25-28, Applicant has amended claim 25, as illustrated above, to include the requirement that the bump portions have a *sharp* point. For similar reasons to those discussed above in regard to claim 4, Okino et al. does not teach or suggest this feature and, accordingly, the rejection of claims 25-28, as amended, should be withdrawn.

***Lack of Prima Facie Case***

Additionally, Applicant submits that the rejection is improper for §103 purposes. A skilled artisan would not have been motivated to combine the independent teachings of Okino et al. and that of the conventional art disclosed in the present application, that is, absent hindsight

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reconstruction. In particular, the Examiner asserts that it would have been obvious to modify the method of the disclosed conventional art “by applying the mask/wet etching as taught by [Okino et al.] in order to add strength to the wiring board through the projection electrode.” However, not only does Okino et al. fail to suggest the asserted modification, or basis for making it, the Examiner’s justification is flawed since providing a wet etch process to the projection electrodes disclosed as the conventional art in the specification would not provide any additional strength to the wiring board. For this additional reason the rejection of claims 25-28 should be withdrawn.

In regard to the rejection of claims 29 and 30, Applicant has amended claim 29 to clarify that the “pointed blade-shaped bump portions” have a *sharp* end, as opposed to the flat ends disclosed in Akram et al. (see Fig. 4A). Since none of the asserted prior art references, either alone or in combination, teach or suggest this feature, the rejection should be withdrawn.

Additionally, Applicant submits that the §103 rejection of claims 29 and 30 is improper since the suggested combination of references would not have been obvious to a skilled artisan. In particular, a skilled artisan would not have combined the independent teachings of Okino et al, Akram et al. and the disclosed conventional art absent impermissible hindsight gleaned from the present application. For this additional reason, the rejection of claims 29 and 30 should be withdrawn.

***Patentability of New Claims***

For additional claim coverage merited by the scope of the invention, Applicant has added new claims 32-35. Applicant submits that the prior art does not disclose, teach, or otherwise suggest the combination of features contained therein.

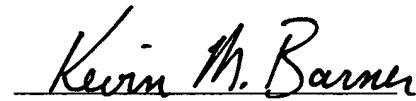
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***Conclusion***

In view of the foregoing remarks, the application is believed to be in form for immediate allowance with at least claims 4-7 and 25-35, and such action is hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, he is kindly requested to **contact the undersigned** at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

  
Kevin M. Barner  
Kevin M. Barner  
Registration No. 46,075

SUGHRUE MION, PLLC  
Telephone: (202) 293-7060  
Facsimile: (202) 293-7860

WASHINGTON OFFICE  
23373  
CUSTOMER NUMBER

Date: October 21, 2003

Attorney Docket No.: Q64291

**PATENT APPLICATION**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of

Docket No: Q64291

Yasuo FUKUDA, et al.

Appln. No.: 09/842,047

Group Art Unit: 3729

Confirmation No.: 6518

Examiner: Tamara D. ALEXANDER

Filed: April 26, 2001

For: **METHOD OF FORMING A PROJECTION ELECTRODE**

**STATEMENT OF SUBSTANCE OF INTERVIEW**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Please review and enter the following remarks summarizing the interview conducted on October 15, 2003 between Examiner Tim Phan and Kevin Barner:

**REMARKS**

An Examiner's Interview Summary Record (PTO-413) has not yet been received from the USPTO as of the filing of this statement.

Applicant's representative solicited an after-final interview to discuss comments made by the Examiner in a previous advisory action to make more clear the issues remaining in the case if an RCE were to be filed.

During the interview several arguments were presented in direct response to the comments made by the Examiner in the Advisory Action dated September 5, 2003. In particular, Applicant's representative brought to the Examiner's attention several instances from within the

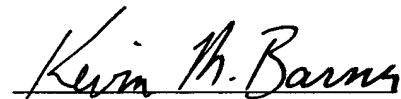


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presently asserted prior art reference, Okino et al., that demonstrate that the probe pins disclosed therein are explicitly *flat*, not sharp and pointed, as recited in the claims. The Examiner made no counter comments except that an Interview Summary would be forthcoming. No Interview Summary has yet been received and, thus, in order to avoid additional extension fees, Applicant has concurrently filed an RCE.

**It is believed that no petition or fee is required.** However, if the USPTO deems otherwise, Applicant hereby petitions for any extension of time which may be required to maintain the pendency of this case, and any required fee, except for the Issue Fee, for such extension is to be charged to Deposit Account No. 19-4880.

Respectfully submitted,



Kevin M. Barner  
Registration No. 46,075

SUGHRUE MION, PLLC  
Telephone: (202) 293-7060  
Facsimile: (202) 293-7860

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